

CLAIMS

What is claimed is:

1. A motor control system for an electric motor, comprising:
 - 5 a first electrical switch comprising:
 - a first set of contacts electrically coupled in series with an input of a variable frequency drive; and
 - a second set of contacts electrically coupled in series with an output of the variable frequency drive.
- 10 2. The system as recited in claim 1, comprising an operator having a first and a second position, wherein the first set of contacts and the second set of contacts are closed when the operator is oriented in the first position and the first set of contacts and the second set of contacts are open when the operator is oriented in the second position.
- 15 3. The system as recited in claim 2, wherein the operator is adapted to be selectively positioned in each of the first and second positions.
- 20 4. The system as recited in claim 2, wherein the system comprises a bypass contactor having a third set of contacts, wherein the third set of contacts is electrically coupled in parallel with the first set of contacts and the second set of contacts.
- 25 5. The system as recited in claim 4, wherein the manual bypass switch comprises a fourth contact electrically coupled in series with the bypass contactor, the fourth contact and bypass contactor being adapted to open the at least one third contact when the operator is oriented in the first position.
6. The system as recited in claim 5, wherein the fourth contact is a normally-open contact, the manual bypass switch being adapted to open the fourth contact to de-

energize the bypass contactor and open the third set of contacts before the first set of contacts and the second set of contacts are closed when the operator is repositioned from the second position to the first position.

5 7. The system as recited in claim 1, comprising a disconnect adapted to control power to the motor controller from a source, wherein the first set of contacts is electrically coupled in series with the disconnect.

10 8. The system as recited in claim 1, comprising a terminal adapted to receive a conductor electrically coupled to the motor, wherein the second set of contacts and the at least one third contact are electrically coupled to the terminal.

9. 9. The system as recited in claim 1, comprising the variable frequency drive.

15 10. A motor control system, comprising:
a variable frequency drive adapted to produce a variable frequency output to control the speed of a motor, the variable frequency drive comprising:

an input to enable power from an external power source to be coupled to the variable frequency drive; and

20 an output to enable the variable frequency drive to be coupled to the motor;
and

25 an electrical system operable to selectively couple the motor to the output of the variable frequency drive and the external power source, the electrical system being adapted to electrically isolate the input and the output of the variable frequency drive from the external power source when the motor is coupled to the external power source.

11. The system as recited in claim 10, wherein the electrical system comprises a manual bypass switch having at least one set of contacts electrically connected in series with the output of the variable frequency drive.

12. The system as recited in claim 11, wherein the manual bypass switch has at least one set of contacts electrically connected in series with the input of the variable frequency drive.

5 13. The system as recited in claim 12, wherein the manual bypass switch comprises a double-break switch having an operator, wherein the at least one set of contacts electrically connected in series with the input of the variable frequency drive and at least one set of contacts electrically connected in series with the output of the variable frequency drive are closed when the operator is positioned in a first position and open when 10 the operator is positioned in a second position.

14. The system as recited in claim 13, wherein the electrical circuit comprises a bypass contactor having at least one set of contacts electrically connected in parallel with the at least one set of contacts electrically connected in series with the input of the variable frequency drive, the variable frequency drive, and the at least one set of contacts electrically connected in series with the output of the variable frequency drive to electrically connect the motor to the external power source.

15. The system as recited in claim 14, wherein the manual bypass switch 20 comprises at least one auxiliary contact electrically connected in series with the bypass contactor, the auxiliary contact being a early-break contact.

16. The system as recited in claim 12, wherein the variable frequency drive is located in a first compartment and the manual bypass switch and bypass contactor is located 25 within a second compartment.

17. The system as recited in claim 10, wherein the external power source is an electrical bus of a motor control center.

18. The system as recited in claim 10, wherein the electrical system is operable to provide a control signal to the variable frequency drive to establish a desired variable frequency output.

5 19. The system as recited in claim 18, wherein the electrical system is coupled to an external communication system to enable the desired variable frequency output to be established remotely via the external communication system.

10 20. A system, comprising:
a first controller operable to drive an electric motor; and
a motor control system comprising a manual bypass switch selectively operable to couple a power source to the first controller and to the motor, wherein the manual bypass switch electrically isolates the first controller from the power source when a second controller operable to drive the electric motor is electrically coupled to the motor.

15 21. The recited in claim 20, wherein the first controller comprises a variable frequency drive.

20 22. The system as recited in claim 20, wherein the motor control system comprises a bypass circuit around the first controller.

23. The system as recited in claim 20, wherein the manual bypass switch is a double-break switch.

25 24. The system as recited in claim 20, wherein the manual bypass switch comprises a first set of contacts electrically coupled between the second controller and an input to the first controller.

25. The system as recited in claim 24, wherein the manual bypass switch comprises a second set of contacts electrically coupled between the motor and an output of the first controller.

5 26. The system as recited in claim 20, wherein the manual bypass switch comprises a third set of contacts electrically coupled in series with a bypass contactor having an electrical contact electrically coupled in series between the second controller and the motor.

10 27. The system as recited in claim 26, comprising the second controller operable to drive the electric motor.

15 28. A method of operating a motor controller, comprising:
orienting a manually-operated switch in a first position to electrically couple a power source to a variable frequency drive and electrically couple the variable frequency drive to a motor; and

positioning the manually-operated switch in a second position to remove power from the variable frequency drive and de-couple the variable frequency drive from the motor.

20 29. The method as recited in claim 28, wherein positioning the switch in a second position comprises electrically coupling the power source through a second controller to the motor after removing power from the variable frequency drive and de-coupling the variable frequency drive from the motor.

25 30. The method as recited in claim 29, comprising re-orienting the switch in the first position, wherein the power source is electrically coupled to the variable frequency drive and the variable frequency drive is electrically coupled to the electric motor after the second controller is de-coupled from the electric motor.